Designation: ~~A573/A573M – 13~~ A573/A573M – 20

Standard Specification for Structural Carbon Steel Plates ~~of Improved Toughness~~[1]

This standard is issued under the fixed designation A573/A573M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers structural quality carbon-manganese-silicon steel plates in three tensile strength ~~ranges intended primarily for service at atmospheric temperatures where improved notch toughness is important.~~ ranges.

NOTE 1—This specification was originally intended primarily for construction of storage tanks used at ambient temperatures when improved toughness was needed over that available in semi-killed ingot cast steels.

1.2 Plates covered by this specification are limited to a maximum thickness of 1.5 in. [40 mm].

1.3 If the steel is to be welded, it is presupposed that a welding procedure suitable for the grade of steel and intended use or service will be utilized. See Appendix X3 of Specification A6/A6M for information on weldability.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not necessarily exact equivalents; therefore, ~~each system is to~~ to ensure conformance with the standard, each system shall be used independently of the ~~other without combining values in any way.~~ other, and values from the two systems shall not be combined.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

3. General Requirements for Delivery

3.1 Plates furnished under this specification shall conform to the requirements of the current edition of Specification A6/A6M, unless a conflict exists in which case this specification shall prevail.

~~**4. Materials and Manufacture**~~

~~4.1 The steel shall be made to fine grain practice.~~

4. Chemical Composition

4.1 The heat analysis shall conform to the requirements given in Table 1.

4.2 The product analysis shall conform to the requirements given in Table 1 subject to the product analysis tolerances in Specification A6/A6M.

5. Tension Test

5.1 The plates, as represented by the tension test specimens, shall conform to the tensile requirements given in Table 2.

[1] This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock and Ships.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the ~~standard's~~standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Chemical Requirements (Heat Analysis)

	Composition, %		
	Grade 58 [400]	Grade 65 [450]	Grade 70 [485]
Carbon, max:			
½ in. [13 mm] and under	0.23	0.24	0.27
Over ½ in. [13 mm] to 1½ in., [40 mm], incl	0.23	0.26	0.28
Manganese[A]	0.60–0.90	0.85–1.20	0.85–1.20
Phosphorus, max	0.030	0.030	0.030
Sulfur, max	0.030	0.030	0.030
Silicon	0.10–0.35	0.15–0.40	0.15–0.40
Aluminum (total), min[B]	0.020	0.020	0.020

[A] For each reduction of 0.01 percentage point below the specified maximum for carbon, an increase of 0.06 percentage points above the specified maximum for manganese is permitted, up to a maximum of 1.50 % for Grades 58 and 65; and up to a maximum of 1.60 % for Grade 70.
[B] Minimum aluminum content does not apply to plates with widths up to and including 15 in. [380 mm].

TABLE 2 Tensile Requirements[A]

	Grade 58 [400]	Grade 65 [450]	Grade 70 [485]
Tensile strength, ksi [MPa]	58–71 [400–490]	65–77 [450–530]	70–90 [485–620]
Yield point, min, ksi [MPa]	32 [220]	35 [240]	42 [290]
~~Elongation in 8 in. [200 mm] min[B,C], %~~	~~21~~	~~20~~	~~18~~
Elongation in 8 in. [200 mm] min,[B,C] %	21	20	18
~~Elongation in 2 in. [50 mm], min[B,C], %~~	~~24~~	~~23~~	~~21~~
Elongation in 2 in. [50 mm], min,[B,C] %	24	23	21

[A] See the Orientation subsection in the Tension Tests section of Specification A6/A6M.
[B] Elongation need not be determined for floor plate.
[C] For plates wider than 24 in. [600 mm], the elongation requirement is reduced two percentage points. See the Elongation Requirement Adjustments subsection in the Tension Tests section of Specification A6/A6M.

6. Keywords

6.1 carbon steel; plates; structural steel; toughness; welded construction

SUPPLEMENTARY REQUIREMENTS

Standardized supplementary requirements for use at the option of the purchaser are listed in Specification A6/A6M. Supplementary requirements shall not apply unless specified in the purchase order or contract. Those that are considered suitable for use with this specification are listed by title:

S5. Charpy V-Notch Impact Test